PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5: WO 90/11979 (11) International Publication Number: A1 C04B 35/00, A61L 27/00 (43) International Publication Date: 18 October 1990 (18.10.90) A61K 6/06

(21) International Application Number:

PCT/SE90/00207

(22) International Filing Date:

30 March 1990 (30.03.90)

(30) Priority data: 8901294-2

10 April 1989 (10.04.89) SE

(71) Applicant (for all designated States except US): STIFTEL-SEN CENTRUM FÖR DENTALTEKNIK OCH BI-OMATERIAL I HUDDINGE [SE/SE]; Institutionsvägen 6, Plan 7, S-141 04 Huddinge (SE).

(72) Inventors: and

(75) Inventors/Applicants (for US only): HERMANSSON, Leif [SE/SE]; Brunnsgården, S-740 20 Brunna (SE). FOR-BERG, Sevald [SE/SE]; Bastuhagsvägen 35, S-122 42 Enskede (SE). JIANGOU, Li [CN/SE]; Wenner-Gren Center, Sveavägen 166, S-113 46 Stockholm (SE).

(74) Agent: HYNELL, Magnus; Hynell Patenttjänst AB, Box 236, S-683 02 Hagfors (SE).

(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent),

patent), BR, CA, CF (OAFI patent), CG (OAFI patent),
+ CH, CH (European patent), CM (OAFI patent), DE,
+ DE (European patent), DK, DK (European patent), ES,
ES (European patent), FI, FR (European patent), GA
(OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent),
MW, NL, NL (European patent), NO, RO, SD, SE, SE
(Furopean patent) SN (OAPI patent), SIL TD (OAPI (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.

Published

With international search report. In English translation (filed in Swedish).

(54) Title: COMPOSITE CERAMIC MATERIAL AND METHOD TO MANUFACTURE THE MATERIAL

(57) Abstract

The present invention relates to a method to manufacture a composite ceramic material having a high strength combined with bioactive properties, when the material is used as a dental or orthopedic implant, which includes preparing a powder mixture, mainly comprising partly a first powder, which in its used chemical state will constitute a bioinert matrix in the finished material, and partly a second powder, mainly comprising a calcium phosphate-based material. The invention is characterized in that said first powder comprises at least one of the oxides belonging to the group consisting of titanium dioxide (TiO2), zirconium oxide (ZrO₂) and aluminum oxide (Al₂O₃), in that said second powder mainly comprises at least one of the compounds hydroxylapatite and tricalcium phosphate, in that a raw compact is made of said powder mixture and in that said raw compact is densified through an isostatic pressing in a hot condition (HIP) at a pressure higher than 50 MPa, a composite material being obtained, in which said matrix comprises one or several metal oxides of said first powder, in which matrix said compound hydroxylapatite and/or tricalcium phosphate is evenly dispersed. The invention also relates to a composite ceramic material as well as a body, completely or partially made of this material.